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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,460	07/23/2003	Jen-Jung FAN	45283.95	1459
22828	7590	02/03/2005	EXAMINER	
EDWARD YOO C/O BENNETT JONES 1000 ATCO CENTRE 10035 - 105 STREET EDMONTON, ALBERTA, AB T5J3T2 CANADA			MAYES, MELVIN C	
			ART UNIT	PAPER NUMBER
			1734	
DATE MAILED: 02/03/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/604,460

Applicant(s)

FAN ET AL.

Examiner

Melvin Curtis Mayes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 8-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/6,14/03,1/21/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

(1)

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-7, drawn to a method of forming a high temperature gas seal, classified in class 156, subclass 89.28.
- II. Claim 8, drawn to a high temperature gas seal, classified in class 428, subclass 411.1.
- III. Claims 9-14, drawn to a seal, classified in class 277, subclass 650.

(2)

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by installing a seal of ceramic components only.

Inventions III and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the product can be used to form a sealant coating on a surface.

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(3)

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

(4)

During a telephone conversation with Edward Yoo the week of January 24, 2005, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-7. Affirmation of this election must be made by applicant in replying to this Office action. Claims 8-14 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

(5)

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 112***

(6)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 3, 4 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 claims the “ceramic component comprises a ceramic felt or paper **or** ceramic particles” but then claims that “the ceramic particles” are impregnated within the ceramic felt or paper. Is the claim limited to the ceramic component comprises ceramic felt or paper **and** ceramic particles, since ceramic particles are positively impregnated into ceramic felt or paper?

Claim 4 recites the limitation "the metal particles" in line 1. There is insufficient antecedent basis for this limitation in the claim. Metal particles are claimed in Claim 3.

***Claim Rejections - 35 USC § 102***

(7)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(8)

Claims 1, 2 and 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 10-116624.

JP 10-116624 discloses a method of making a solid oxide fuel cell (SOFC) having an airtight seal comprising: mixing aluminum metal powder with ultrafine oxide powder such as YSZ (yttria-stabilized zirconia) powder and water and binder; casting the mixture into a sealant

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band; sandwiching the sealant between two cells; heating in oxygen gas or air to oxidize the aluminum to form alumina; and sintering the alumina to the oxide powder (Abstract and computer translation).

***Claim Rejections - 35 USC § 103***

(9)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

(10)

Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-116624 as applied to claim 1 above, and further in view of WO 02/17416.

JP '624 discloses that the ultrafine oxide powder is not restricted to YSZ but can be any oxide powder having a melting point higher than 1000-1200°C and that is chemically stable [0075]. JP '624 discloses that the operating temperature of a SOFC is usually 800-1200°C and that alumina can maintain a solid state at the operating temperature. JP '624 does not disclose impregnating a ceramic felt or paper with oxide powder such as alumina and aluminum powder to make the sealant.

WO '416 teaches that to provide a flexible high temperature gas seal for a solid oxide fuel cell, a sealing element can be provided by providing a matrix of ceramic fibers and interspersing solid particles in the matrix such as by providing a ceramic felt or paper and soaking the felt or paper in a suspension of the particles. WO '416 teaches that ceramic materials for the fibers and particles are those which are chemically compatible with the fuel cell environment and resist sintering at the operating temperature of the fuel cell and include alumina and zirconia (pg. 2-5).

It would have been obvious to one of ordinary skill in the art to have modified the method of JP '624 for making a solid oxide fuel cell by providing the sealant with a matrix of ceramic fibers, as taught by WO '416, to provide a flexible gas seal. Providing the sealant with a ceramic fiber matrix by impregnating the mixture of aluminum and oxide powders into a ceramic



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felt or paper would have been obvious to one of ordinary skill in the art, as taught by WO '416, for making a flexible sealing element for a SOFC.

It would have been obvious to one of ordinary skill in the art to have further modified the method of JP '624 by providing the ultrafine oxide powder as alumina, as claimed in Claim 7, as taught by WO '416, as a ceramic material which is chemically compatible with the fuel cell environment and resists sintering at the operating temperature of the fuel cell. The use of YSZ (zirconia) or alumina for the oxide powder would have been obvious to one of ordinary skill in the art, as taught by WO '416.

### ***Conclusion***

(11)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(12)


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Melvin Curtis Mayes  
Primary Examiner  
Art Unit 1734

MCM  
February 1, 2005